elements necessary to enable us to form an accurate opinion. The mortality among 3971 children admitted during 1890–1894, and who were treated on ordinary lines, *i.e.* without curative serum, amounted to 51 per cent., the highest mortality being in 1890, when it reached 59 per cent., and the lowest in 1892, when it fell to 47 per cent. On February 1, 1894, Dr. Roux began the inoculations. As soon as a child suffering from diphtheria was admitted into the Hôpital des Enfants Malades, it received 20 c.c. of serum subcutaneosly, and if no improvement took place, 10 c.c. or more were again injected next day. 448 children were thus treated from February 1 to July 24, 1894, and 109 died, the mortality being 24·5 per cent. At the Hôpital Trousseau, on the other hand, 520 children were admitted during that period, and treated without the injection of curative serum. Of these 316 died, giving a mortality of 60 per cent. This difference is striking enough ; but it is even more marked when we come to analyse the results. In the first place, we must eliminate from Dr. Roux's statistics 128 cases which were shown by bacteriological examination not to be diphtheria. This mistake is perfectly legitimate, as it has been shown that without a bacteriological examination, it is impossible to make an accurate diagnosis. The injection of the serum in a doubtful case is followed by no harm, and as the result of the bacteriological examination cannot be known for twenty-four hours, the injection of the serum will, at any rate, prevent the child catching the disease from his neighbour. The mortality among such cases we know to be very slight, and in the statistics of previous years, as well as in those of the Hôpital Trousseau, these cases are included among the cures, so that the proportion of cures appears to be much higher than it really is. These cases being excluded from Dr. Roux's statistics, there remain 320 children in which the bacteriological examination revealed the presence of the diphtheria-bacillus. Of these 20 died on admission, before any therapeutic measures whatever could be employed. Of the 300 other children 78 died, giving a mortality of 26 per cent. We may further divide these into uncomplicated cases, and those in which tracheotomy had to be performed for laryngeal obstruction. Of the uncomplicated cases, the mortality in Dr. Roux's wards amounted to 12 per cent. ; whilst at the Hôpital Trousseau, where no serum was used, the mortality during the same period reached 32 per cent. In the preceding years it was 33 per cent. in the wards in which Dr. Roux carried out his experiments.

Turning now to the cases in which tracheotony had to be performed, we find that 49 per cent. of Dr. Roux's cases died. At the Hôpital Trousseau in the same period 86 per cent. of the tracheotomised children perished. Similar results have been obtained in Germany, the mortality in some wards falling as low as 14 per cent. Prof. Ehrlich has shown that the question of time is a most important element, and that the chances of obtaining a cure are infinitely greater when the remedy is applied at an early stage of the disease. The following table, reprinted from the *Deutsche Medicinische Wochenschrift*, will explain this :

Time elapsed from onset of disease to injection of serum.	Number of cases.	Number of cures.	Number of deaths.	Cures, per cent.
1	6	6	0	100
2	66	64	2	97
3	29	25	4	86
4	39	30	9	77
5	23	13	10	56·5

It will be noticed that the number of cures diminishes according to the length of time which has elapsed since the onset of the disease.

It appears to me to be difficult to explain away the results obtained in France and Germany by simply saying that the epidemic has been a mild one ; for in other hospitals and institutions in which the curative serum has not been used, the mortality has remained the same, or even increased. In fact, it is plain that the serum treatment of diphtheria is now established on a firm basis, and that it is only right that we should at once give the children in this country the benefit of the results of experimental investigation which has been principally carried on abroad. The British Institute of Preventive Medicine is now taking steps to provide the serum at cost price.

Finally, it is right to draw attention to the fact that although the knowledge of the biology of the diphtheria bacillus, and of the effects of its poison, has been based on the investigations of different observers—French, German, and English—yet the discovery of the curative effect of the serum of immunised animals is the merit of one man only—Prof. Behring, of Berlin.

M. A. RUFFER.

NOTES.

THE Paris Academy of Moral and Political Sciences has bestowed the Audiffret prize of twelve thousand francs upon Dr. Roux for his treatment of diphtheria.

A STATUE of Claude Bernard, the eminent physiologist, was unveiled at Lyons on Sunday last, in the presence of a distinguished company.

THE *National Zeitung* states that news has reached Berlin from the Kilima-Njaro district that the German botanist, Dr. Lent, and the zoologist, Dr. Kretzschmar, have been killed, with several of their black followers.

DALZIEL'S correspondent at New York says that a dispatch received from Buenos Ayres gives particulars of a severe earthquake, attended by great loss of life, which occurred on Saturday, October 27, at the town of San Juan de la Fronteza, the capital of the Province of San Juan, in the Argentine Republic. Many of the principal buildings are said to have been destroyed. The shock extended to the towns of La Paz, Cordova, and Rosario. The New York *Herald* of Monday published a telegram from Buenos Ayres stating that two thousand persons have perished in the earthquake at La Rioja, and that twenty thousand are homeless. This alarming report has not, however, been confirmed.

NUMEROUS memoirs have already been based upon the rich collection of Dutch birds brought together by the late Mr. J. P. van Vickevoort Crommelin, of Harlem, and presented, after his death, by his daughter to the Leyden Museum. Ornithologists will therefore welcome the appearance of a complete catalogue of the collection, which has been compiled by Dr. Jentink, the director of the museum, and forms the fourteenth volume of the catalogues of the Muséum d'histoire naturelle des Pays-bas. Nearly three hundred species are in all enumerated, and the majority of these are represented each by a considerable number of specimens. A separate record is given of every individual, notifying the sex and age, the place and date of capture. An explanation which Dr. Jentink furnishes of the exact locality of all the places mentioned should be of material service to the student of the geographical distribution of these birds.

THE London Mathematical Society, having been on October 23 duly registered as a corporation under Section 23 of the Companies Act, 1867, will hold its first general meeting at its office, 22 Albemarle Street, on Thursday evening, November 8 next, at eight o'clock. The meeting is empowered by the Articles of Association to elect a council and officers, to frame bye-laws and to pass resolutions with regard to the affairs of the Society. The following gentlemen have been recommended by the present council (acting under Article 8) for election as the new council and officers for the ensuing session:—President, Major Macmahon, R.A., F.R.S.; vice-presidents, Messrs. M. J. M. Hill, F.R.S., A. B. Kempe, F.R.S., and A. E. H. Love, F.R.S.; treasurer, Dr. J. Larmor, F.R.S.; hon. secretaries, Messrs. M. Jenkins and R. Tucker; other members, Messrs. A. B. Basset, F.R.S., and G. H. Bryan, Lieut.-Colonel J. R. Campbell, Lieut.-Colonel A. J. C. Cunningham, R.E., Messrs. E. B. Elliott, F.R.S., J. W. L. Glaisher, F.R.S., A. G. Greenhill, F.R.S., E. W. Hobson, F.R.S., and W. H. H. Hudson. At the close of the preceding business, an address will be delivered by the retiring President (A. B. Kempe, F.R.S.), on "Mathematics," after which the meeting will proceed to the ordinary business.

DURING this month, the following lectures will be delivered at the Royal Victoria Hall, Waterloo Bridge Road, S.E.:—November 6, Prof. A. W. Rücker, F.R.S., on "The Electric Spark"; November 13, Mr. H. R. Mill, on "Unexplored England"; November 20, Miss Hope Rea, on "The Grand Canary and its People"; November 27, Miss F. Routledge, on "China."

IT is proposed to hold a "Light and Heat Exhibition" at Woodhouse Park next year. The park is situate at Shepherd's Bush, and is, therefore, in direct communication with all parts of London and the suburbs. The exhibits will be classified into eight divisions, viz.:—Gas lighting; electric lighting; various illuminants; heating and cooking apparatus; naval and military; scientific apparatus; photography; historical. The promoters' intention is to hold a series of technical exhibitions on the same site. Further information can be obtained of the Hon. Secretary, Woodhouse, Shepherd's Bush, W.

PROF. W. M. FLINDERS PETRIE will lecture on "Primitive Egypt," at the London Institution, on November 12. The following are among the other lecturers and subjects for the session ending March 4, 1895:—"Wonder-Working Plants," by Dr. David Morris, C.M.G.; "Climbing in the Himalayas," by Mr. W. Martin Conway; "Extinct Monsters," by Rev. W. N. Hutchinson; "The Newtonian Constant of Gravitation," by Prof. C. V. Boys, F.R.S.; "The Fauna of Rivers and Lakes," by Prof. Sydney Hickson; "Twenty Thousand Feet above the Sea," by Mr. Edward Whymper; "The Netherlands," by Mr. H. J. Mackinder; "Waves of Water and Waves of Light," by Mr. A. P. Laurie; "Nerves and Nerve Centres in Action," by Mr. Henry Power; "Comets," by Sir Robert Ball, F.R.S.; "The Germination of Barley," by Mr. A. Gordon Salamon; "Electric Currents in the Body," by Prof. Victor Horsley, F.R.S.; "The Beautiful as seen in Minute Nature," by the Rev. Dr. Dallinger, F.R.S.; "Theory and Practice of Preventative Inoculation," by Dr. E. E. Klein, F.R.S.

For the last week or so the weather in these islands has been of a very unsettled character generally. Several areas of low barometric pressure have reached us from the Atlantic, and were accompanied by strong gales on nearly all our coasts, and in the Channel very rough weather has been experienced, while thunder and lightning have also occurred in many places. The rainfall has been very heavy, especially in the west of Ireland and south of England, where it amounted to nearly four and a half inches during the week ending October 27, while in the Midland counties the fall reached about two inches. Since the beginning of the year the rainfall has about reached, or exceeded, the average in all districts except the Midland counties, where the deficiency is three inches, and the west coast of Scotland, where it is two and a half inches.

PROF. CLEVELAND ABBE includes the following among his notes in the *Monthly Weather Review* for July:—On June 3 a tornado passed north-eastward through the counties of Harney, Grant, and Union, in Eastern Oregon. The most novel feature attending the disturbance was the hail. It is stated that the formation was more in the nature of sheets of ice than simple hailstones. The sheets of ice averaged three to four inches square, and from three-fourths of an inch to one and a half inches in thickness. They had a smooth surface, and in falling gave the impression of a vast field or sheet of ice suspended in the atmosphere, and suddenly broken into fragments about the size of the palm of the hand. During the progress of the tornado at Long Creek a piano was taken up and carried about a hundred yards.

MR. A. TREVOR-BATTYE, about whose safety some anxiety has been felt, has reached Archangel from the island of Kolguef, where he had been studying bird-life. The proposed relief expedition, for which subscriptions had been invited, is consequently no longer necessary.

THE German collector, J. Menges, describes, in the last number of *Petermanns Mitteilungen*, his travels in the Habr Auel district of Somaliland, inland from Berbera. He visited the country in 1882, and gives a detailed account of his routes in pursuit of big game.

THE last Washington letter published by the American Geographical Society states that the boundary line between the United States and Mexico has been resurveyed, and a series of monuments erected along it at intervals for a distance of 700 miles. The field operations for the survey of the Alaskan frontier are also completed, and the height of Mount Logan has been confirmed as 19,500 feet, thus overtopping Mount St. Elias by 1500 feet. Another interesting result of the joint exploration is to show that both these mountains lie within British territory.

THE Indian Reservations of the United States in which the aboriginal inhabitants are secure against aggressive civilisation, are fast diminishing in number and extent. The last number of the *Bulletin* of the American Geographical Society mentions that four million acres of reserved land in the north-east of Utah, containing great mineral wealth, and hitherto the home of the Uncompahgre and Uintah Indians, is about to be opened to settlement, while nearly a million acres in South Dakota are to be withdrawn from the exclusive occupancy of the Indians of South Dakota, Oregon, and Idaho.

CONSUL C. S. SMITH gives an account of the Anglo-German frontier survey in East Africa, in the November number of the *Geographical Journal*. The survey, which was carried from the mouth of the Umba River on the east coast to Kilimanjaro, was effected in 1892, Mr. Smith being assisted by Mr. Imam Sharif, the Indian surveyor, who subsequently accompanied Mr. Bent to Arabia, and Lieut. G. E. Smith, R.E., and the German party with whom they co-operated was under the charge of Dr. Peters. The route by the Umba Valley to Kilimanjaro was found to be a practicable one, and the country traversed was, as a rule, characterised by fertile soil; but the land suffered from the want of settled inhabitants, on account of the raids of the Masai. Consul Smith suggests that immigrants from India be encouraged to colonise parts of the Umba Valley; and if trade is ultimately attracted there, he points out that the seaport of Wasin, although smaller than Mombasa, would be found quite practicable for steamers.

THE current number of *Himmel und Erde* contains a summary of a lecture by the Director of the Statistical Office of Berlin, on the increase of damage by lightning, and on the effect of lightning on the human body. The increase, which is unmistakable, is attributed to various causes, viz. the employment of electricity in various industries, the continual change of the form of the earth's surface by deforestation, drainage, &c., and the impurities introduced into the atmosphere by the growing consumption of coal. Prof. von Bezold has shown, some time since, that for Bavaria the average yearly number of fires caused by lightning amounted to 32 from 1833–43, to 52 from 1844–65, to 103 from 1866–79, and to 132 between 1880 and 1882. While in the year 1855, 134 persons were struck by lightning, and 73 were killed, the numbers thirty years later reached 189 and 161 respectively. It is noteworthy that persons struck by lightning generally perceive neither lightning nor thunder, but have the idea of being suddenly enveloped by fire.

To the facts of fishes out of water and of crabs on dry land we are accustomed, but the recent announcement of the discovery of a flying Copepod is a novelty of which the naturalist has probably never dreamed, though Giesbrecht's beautiful figures of the Naples forms might well have induced the thought of such a possibility. In the current number of the *Zoologischer Anzeiger* (No. 459), Dr. Ostroumoff, of the Sebastopol Biological Station, states that he and his son were coasting along the Khersonese peninsula on a calm clear morning last July, when they noticed numbers of the tiny green Crustacean, *Pontellina mediterranea* (Claus), flying just above the level of the water. "Many of these Copepods were resting on the surface-film, took springs into the air, where they described a long curve, and fell down again upon the water surface." Dr. Ostroumoff traces the origin of this very exceptional habit to a peculiarity in the manner of exuviation that *Pontellina* probably shares with certain other pelagic Entomostraca, *e.g.* *Evadne*, *Pleopis*, which cast their skins at the surface of the water "by the help of the air which becomes entangled in (*anhält*) their rejected coverings." We should like to hear something more upon this interesting phenomenon, which involves a complete change in the life conditions of the species. It is difficult, at any rate, to imagine that so light and hairy a form as *Pontellina* can return at will to the water again after once breaking through the surface film.

THE Bunsen flame spectra of the metals of the alkalies and the alkaline earths have been studied by Herren J. M. Eder and E. Valenta, by means of an apparatus which enabled them to make exposures of extraordinary length. The apparatus, described in a paper communicated to the Vienna Academy, consisted essentially of a circular strip of platinum gauze mounted in a slanting position on a nickel wheel. The lower edge dipped into a solution of the salt to be examined, and the upper edge passed through the Bunsen flame. The wheel was kept slowly rotating by clockwork, and the steady and uniform spectrum obtained was photographed. In the case of sodium and potassium no lines were discovered that were not already known from the spark and arc spectra, although the ultra-violet sodium lines of wave-lengths 3303 and 3853 were well rendered. But with an exposure of some thirty hours a large number of new bands appeared in the violet and ultra-violet spectra of the metals of the alkaline earths. They belonged chiefly to the oxides, and consisted partly of double bands arranged pretty regularly on a continuous background. The spectrum of boracic acid, obtained by burning a mixture of coal gas and $B(C_2H_5)_3$ in a Linnemann burner, showed six new violet and ultra-violet bands, which by their general character and their regular distribution correspond to those previously observed in the visible spectrum.

A REMARKABLE instance of the anomalous behaviour of bodies at very low temperatures is given by M. Raoul Pictet in the *Revue Scientifique*. For the preparation of pure chloroform by crystallisation at $-69°$ C. he used two copper refrigerators, of capacities of 2½ and 32 litres respectively. The former being more convenient, it was used for the first series of experiments. About 2 kgr. of commercial chloroform were put into a glass test-tube, placed in the refrigerator, and surrounded by a temperature of about $-120°$, as indicated by a sulphuric ether thermometer. The chloroform appeared turbid at $-40°$ or $-50°$, and was filtered and further cooled. At $-68°{\cdot}5$ the cooling ceased, and very transparent crystals of chloroform appeared on the walls of the test-tube. The chemically pure chloroform thus obtained was used with great success in the Berlin hospitals, and larger quantities had to be obtained. M. Pictet noticed with great surprise that chloroform, refrigerated in the larger vessel, was cooled to $-81°$ without a trace of crystallisation. To test for experimental errors the small refrigerator was exposed to the same cooling process, and the chloroform crystals plunged into the larger one. But the crystals dissolved at once, though the same thermometer, successively plunged in the two refrigerators, fell from $-68°{\cdot}5$ to $-81°$, where no crystallisation was going on. Finally, the whole test-tube, with crystals at the walls, liquid chloroform in the centre, and thermometer standing at $-68°{\cdot}5$, was immersed bodily in the liquid chloroform at $-81°$. The thermometer gradually fell from $-68°{\cdot}5$ to $-81°$, while the crystals dissolved before the observer's eyes. M. Pictet works out an explanation of this striking phenomena on the basis of the theory of radiation and his own theory of the molecular constitution of solids and liquids, which leads him to the conclusion that heat oscillations corresponding to low temperatures traverse bad heat conductors with greater facility than they do compact and heavy substances such as metals.

THE fifth report upon the activity of the German Imperial Physico-Technical Institute appears in the *Zeitschrift für Instrumentenkunde*. Besides the electrical work, which chiefly dealt with resistances, the principal subjects of investigation were connected with thermometers, manometers, barometers, pyrometers, standard Hefner lamps and photometry, and the physical properties of various kinds of glass. The branch establishment at Ilmenau, in the Grand Duchy of Saxony, has been extended by the addition of a technical school for workers in glass instruments. Among the barometers tested were the aneroids employed by Dr. von Drygalski on his Greenland expedition. It appeared that low temperatures are capable of creating a temporary disturbance in the indications of these instruments. The chief optical work was connected with photometry. As regards the introduction of the Hefner lamp as a standard of illumination, the report points out that Germany is ahead of other countries in possessing a well-authenticated standard of light which answers all technical requirements. Recently the Institute has endeavoured to construct simple and portable photometers for technical purposes. Two such instruments have been constructed and found to work well. The photometry of the arc lamps illuminating "Unter den Linden" at Berlin, was also taken in hand by the Institute. The examination of different glasses related mainly to their solubility in water, which was found to give an indication of various other properties. The electrolytic precipitation of zinc and other metals from dilute solutions was investigated with a view to their preparation in a pure state. The examination of specimens of steel, of chronometer oils, and of coloured thermometer liquids, was among the many tasks allotted to this most useful and many-sided National Physical Laboratory.

IN the Pitt Press Mathematical Series there is no more useful volume than "Arithmetic for Schools," by Mr. Charles Smith.

The Cambridge University Press has published a second edition, in two parts, of Mr. Smith's work. Evidently the book has met with the reception it deserves.

THE importance of experimental work is fully recognised in the agricultural department of the Glasgow and West of Scotland Technical College. We have before us the reports on experiments on the manuring of hay, oats, and turnips, conducted in 1893 on the Home Farm of Cleghorn Estate, near Lanark, and on about fifty other farms scattered all over the south-western counties of Scotland. Prof. R. P. Wright, who directed the experiments, must derive satisfaction from the useful conclusions to which they have led.

THE first part of Mr. J. W. Taylor's "Monograph of the Land and Fresh-water Molluscs of the British Isles," published by Messrs. Taylor Bros., Sovereign Street, Leeds, has just appeared. It would be difficult to speak too highly of the fine coloured plate which forms the frontispiece to the part, or of the 138 well-drawn illustrations in the text. These figures will be recognised by all conchologists as faithful representations of the species they personify. The work is readable, concise, and accurate, so far as it has been published, and the scientific naturalist, as well as the systematic student, will find it useful and interesting.

MR. R. L. JACK, the Government Geologist of Queensland, has issued his report of the progress of the geological survey for last year. We learn from it that the most important work of the year was the production of a geological map of the Charters Towers gold field. The first edition of this map was issued early in the present year, and Mr. Jack does not claim too much when he says that no important centre of mining industry in Australia has been so thoroughly mapped. The underground work has now been completed, and it is expected that a second edition, embodying this work, will shortly be published. With Mr. Jack's report we received a report, by Mr. W. H. Rands, on the Towalla and Marceba gold fields.

WITHIN the past few years the number of students and workers in glacial geology has greatly increased. The third edition of Prof. James Geikie's "Great Ice Age," just published by Mr. Edward Stanford, appeals therefore to a much larger class than when the previous issue appeared seventeen years ago. The work has been enlarged, and most of it has been rewritten. The mass of glacial literature that has accumulated during the last fifteen years or so, has rendered it possible for the author to treat the glacial, and interglacial, deposits of the continent much more fully than in the second edition. The phenomena of existing glacial action in Alpine and Arctic regions, and the glaciation of Scotland, have been revised in the light of recent work, and several rearrangements of matter have been made. An important addition consists of two chapters on the glacial phenomena of North America, by Prof. T. C. Chamberlin. All glacialists will welcome this authoritative account of the glacial accumulations of Canada and the United States. It increases the value of what has always been a valuable treatise.

THE additions to the Zoological Society's Gardens during the past week include a Barbary Ape (*Macacus inuus*), a Turtle Dove (*Turtur communis*), four Barbary Turtle Doves (*Turtur risorius*), four Barbary Partridges (*Caccabis petrosa*), a Crested Lark (*Alauda cristata*) from Morocco, presented by Mr. Alfred J. Gosling; a Caracal (*Felis caracal*), from South Africa, presented by Mr. J. E. Matcham; a Brown Capuchin (*Cebus fatuellus*) from Guiana, presented by Mr. T. A. Jenkins; a Common Buzzard (*Buteo vulgaris*) from Aden, presented by Captain R. Workman; a Lanner Falcon (*Falco lanarius*), captured at sea, presented by Mr. Arthur J. Elliott; a Hawks-billed Turtle (*Chelone imbricata*) from the East Indies, presented by Captain E. F. Tyacke; two Long-nosed Crocodiles (*Crocodilus cataphractes*) from West Africa, presented by Mr. J. Banks Elliott, three Rusa Deer (*Cervus hippelaphus*, ♂ ♀ ♀) from Mauritius, presented by Rear-Admiral Kennedy; two Somili Ostriches (*Struthio molybdophanes*) from Somaliland, purchased; four Plumed Ground Doves (*Geophaps plumifera*) from Australia, received in exchange.

OUR ASTRONOMICAL COLUMN.

THE SPECTRUM OF δ CEPHEI.—M. A. Belopolsky has taken a number of photographs of the spectrum of δ Cephei—a variable of short period—and determined from them the velocity of the star in the line of sight. The results obtained showed a periodic variation, and M. Belopolsky used them to find the elements of the star's orbit, in the manner described by Dr. Lehmann-Filhés in the *Astronomische Nachrichten*, No. 3242 (see NATURE, August 2, p. 327). He finds that the eccentricity of the orbit is 0·46; and the apparent semi-major axis 180,000 geographical miles (207,000 English miles). The period of the star is 5d. 9h. The maximum velocity of approach is about 2·8 statute miles per second, and of recession 3·2 miles per second. The system, as a whole, is therefore moving away from our own system. It is found that the light-minimum occurs one day before the time of periastron passage given by the computed elements of the orbit.

THE ROTATION OF VENUS.—For eight years M. Flammarion has carried on observations of the polar caps of Venus, and, in the current *Comptes-rendus*, he discusses the bearing of his results upon the question of the planet's period of rotation. It will be remembered that Schiaparelli concluded in 1890 that the rotation and revolution periods of Venus were of the same length, viz. 225 days; but later observations by Trouvelot and others have led many astronomers to doubt this interpretation, and to believe that the rotation period of the planet is not very different from that of the earth. M. Flammarion remarks that if it is conceded that the polar caps are really due to snow or ice, their very existence is against Schiaparelli's view. As the two caps are often visible at the same time, it appears that the axis of Venus is but slightly inclined to the orbit. M. Flammarion's observations of markings on the planet are not sufficient to determine the period of rotation, but they appear to indicate that it is not far removed from twenty-four hours.

THE LOWE OBSERVATORY.—A few particulars with regard to the new astronomical observatory, which has lately been erected in Southern California by Prof. T. S. C. Lowe, are given in Saturday's *Times*. The observatory is seven miles by rail north of Pasadena, and sixteen miles north-east of Los Angeles. Its altitude is about 3600 feet above the sea, and 2000 feet above the hill at the base of the mountains, which are very steep at this point. While the crest of the range rises high above the observatory and shelters it on the north, leaving, however, the North Star visible, the entire southern horizon is unobstructed, extending to the rim of a large segment of the Pacific Ocean, about 100 miles distant, on the south and west. Astronomically, it is nearly at the intersection of the 34th parallel of north latitude with the 118th meridian of longitude west of Greenwich. The new observatory is well equipped with the great 16-inch Clark reflector and other instruments which have done no able work in the Warner Observatory at Rochester under the directorship of Dr. Lewis Swift, who will now superintend the Lowe Observatory.

THE MEAN PARALLAX OF STARS.—In the *Astronomische Nachrichten*, No. 3258, Prof. Hugo Gyldén gives the results of his attempts to discover a formula connecting the parallax of a star with its magnitude and its apparent motion. The fifty-six stars which have had their parallaxes determined with a satisfactory degree of accuracy were arranged in groups according to their magnitude and according to their apparent motion. After a lengthy series of tentative formulæ, the observed values were connected within about ten per cent. by the following formula,

$$P = 0''{\cdot}204\, e^{-0{\cdot}2138 m\, \Psi_m}$$

where $\Psi_m = 2 - \left(\frac{1}{e}\right)^{\frac{m}{10}}$ m is the magnitude, and P the parallax of stars exhibiting no proper motion. For stars with